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| APPLICATION NO.   | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|---------------------|------------------|
| 10/518,792  | 09/01/2005  | Edward J Sare        | 07811.0019-00       | 8239             |
| 22852   | 7590        | 03/16/2007           | EXAMINER            |                  |
| FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER<br>LLP<br>901 NEW YORK AVENUE, NW<br>WASHINGTON, DC 20001-4413 |             |                      | PARVINI, PEGAH      |                  |
|   |             |                      | ART UNIT            | PAPER NUMBER     |
|   |             |                      | 1755                |                  |
| SHORTENED STATUTORY PERIOD OF RESPONSE  | MAIL DATE   | DELIVERY MODE        |                     |                  |
| 3 MONTHS  | 03/16/2007  | PAPER                |                     |                  |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

|                              |                        |                     |
|------------------------------|------------------------|---------------------|
| <b>Office Action Summary</b> | <b>Application No.</b> | <b>Applicant(s)</b> |
|                              | 10/518,792             | SARE ET AL.         |
|                              | <b>Examiner</b>        | <b>Art Unit</b>     |
|                              | Pegah Parvini          | 1755                |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

1) Responsive to communication(s) filed on 21 December 2004.  
 2a) This action is FINAL.                    2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

4) Claim(s) 1-38 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
 5) Claim(s) \_\_\_\_\_ is/are allowed.  
 6) Claim(s) 1-38 is/are rejected.  
 7) Claim(s) 3 is/are objected to.  
 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
     1. Certified copies of the priority documents have been received.  
     2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
     3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

|   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>20050901, 20041221</u> . | 5) <input type="checkbox"/> Notice of Informal Patent Application |
|   | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Specification***

1. The abstract of the disclosure is objected to because the unit of the particle size is disclosed as "arm" whereas everywhere else, the unit used is microns. Correction is required. See MPEP § 608.01(b).

### ***Claim Objections***

2. Claim 3 is objected to because of the following informalities: the word "wherein" has been repeated twice. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-6, 13-18, 27, and 37 are rejected under 35 U.S.C. 102(b) as being unpatentable by US Patent No. 5,393,340 to Slepety et al.

5. Regarding claims 1 and 6, Slepety et al. teach a calcined kaolin pigment in which 60-85% by weight of it has a particle size of less than 1 micron, and its solid content is from 20% to 70% by weight (column 3, line 10; column 6, lines 48-49).

It is noted that claim 1 claims a composition comprising calcined kaolin wherein at least 40% by weight of the calcined kaolin has a particle size of at least about 1 micron, and a solids content of at least about 58% by weight.

6. Regarding claims 2-5, Slepets et al. disclose that between 60%-85%, preferably between 64%-82% of the particles have particle sizes of less than 1 micron; additionally, the prior art disclose that between 80%-98%, preferably between 88%-98% of the particles have a particle size of less than 2 microns (column 3, lines 9-10).

7. Regarding claims 13-18, Slepets et al. teach the employing of clay dispersants such as polyacrylate in the clay material in an amount of 0.20% to 0.40% based on the weight of the clay (column 6, lines 29-34).

8. Regarding claim 27, the reference teaches that the grinding is done via "wet grinding" process (column 6, lines 22-25). Furthermore, the clay is ground to produce mechanically delaminated pigment grades (column 4, lines 48-57).

9. Regarding claim 37, the reference discloses the use of calcined kaolin clay in paints (column 1, lines 41-43). It is noted that Slepets et al., also, teach calcined kaolin slurry with the properties as specified in claim 1 (column 1, lines 5-12; column 6, lines 48-49).

10. Claims 1-6, 29-30, and 35-36 are rejected under 35 U.S.C. 102(b) as being unpatentable by US Patent No. 6,150,289 to Chen et al.

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11. Regarding claims 1-6, Chen et al. disclose aqueous slurry of calcined kaolin clay used in coating composition which contains about 30% to 70% by weight of solids, and about 80% by weight the calcined kaolin has an equivalent spherical diameter (esd) less than 1 $\mu\text{m}$  (column 4, lines 22-26; column 6, lines 1-14).

12. Regarding claims 29 and 36, Chen et al. teach treating calcined kaolin clay so to obtain a particle size distribution such that about 80% by weight of the particles have an esd less than 1 $\mu\text{m}$  (column 9, lines 60-67; column 10, lines 1-55).

13. Regarding claim 30, Chen et al. disclose that in a preferred embodiment of the disclosed invention, a cationic polymer is used as a dispersant in the aqueous slurry containing calcined kaolin clay (column 6, lines 53-56). The reference, further, discloses that the calcined kaolin is treated with cationic polymer prior to mixing with water (column 9, lines 60-67).

14. Regarding claim 35, Chen et al. disclose that through the process, which results in the desired clay particle size, a dry grinding process in a conventional ball mill is done as well (column 6, lines 15-23). It is noted that this grinding process is not considered a mechanical grinding process by applicants' definition.

### ***Claim Rejections - 35 USC § 103***

15. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

16. Claims 7-9, 11-14, 16-22, and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Slepets et al. in view of US Application Publication No. 2003/0177952 A1 to Cummings et al.

17. Regarding claims 7-9, 11-14, and 16-22, Slepets et al. disclose a calcined kaolin pigment used in paper coating, paints, and plastics in which the content of clay solids is from 20% to 70% and about 60-85% have a particle size less than 1 $\mu$ m.

Slepets et al. do not disclose the use of at least one thickener, at least one dispersant, and at least one biocide in the slurry.

Cummings et al. disclose that some optional additives may be added to coating compositions comprising of kaolin clay; such materials are, for example, thickeners such as montmorillonite, CMC (carboxymethyl cellulose), HMC (hydroxymethyl cellulose), HEC (hydroxyethyl cellulose) in an amount of up to about 2% by weight, dispersants such as polyelectrolytes such as polyacrylates in an amount of up to about 2% by weight, and biocides such as metaborate in an amount of up to 1% by weight (paragraphs [0070], [0073], [0075], [0085], and [0087]).

Slepets et al. and Cummings et al. are analogous art because they are from the same area of art, which is paper coating and coating compositions.

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At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify Slepets et al. to include the optional additives as that taught by Cummings et al. motivated by the fact that biocides are used as spoilage control agents and, as known in the art, they are used to prevent mold growth. Additionally, in general, the three groups of additives mentioned above are a variety of classes of additives used depending upon the type of coating and the material to be coated in the coating composition.

Therefore, it would have been obvious to combine Cummings et al. with Slepets et al. to obtain the invention as specified in claims 7-9, 11-14, and 16-22.

18. Regarding claim 38, Slepets et al. disclose a calcined kaolin pigment used in paper coating, paints, and plastics in which the content of clay solids is from 20% to 70% and about 60-85% have a particle size less than 1 $\mu$ m.

Slepets et al. do not disclose a method of coating paper or coated paper-board.

Cummings et al. disclose a method of coating paper in which use of generally high solids content is desirable but not so much as to increase the viscosity of the slurry (paragraphs [0088]-[0093]).

Slepets et al. and Cummings et al. are analogous art because they are from the same area of art, which is paper coating and coating compositions.

It would have been obvious to modify Slepets et al. to include a method of coating paper as that taught by Cummings et al. motivated by the fact that there are different methods of coating in which each differs from the other depending on the

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material to be coated, the coating composition to be applied and the other factors as determined by the operator such as speed and ease of runnability ([0088]). Moreover, the reference discloses the solids content which overlaps with what is claimed in the instant application; furthermore, that range of solids content is obtained after mixing the slurry with water ([0093]).

Therefore, it would have been obvious to combine Cummings et al. with Slepety's et al. to obtain the invention as specified in claim 38.

19. Claims 7-9, and 10-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Slepety's et al. in view of US Patent No. 5,028,268 to Ince et al.

20. Regarding claims 7-9, Slepety's et al. disclose a novel calcined kaolin pigment used in paper coating, paints, and plastics in which the content of clay solids is from 20% to 70% and about 60-85% have a particle size less than 1 $\mu$ m.

Slepety's et al. is silent as to the use of at least one thickener in the kaolin slurry.

Ince et al. disclose the addition of a small amount of a conventional binder or stabilizer to be added to the aqueous slurry kaolin clay (column 5, lines 18-23). As some examples of such binder, Ince et al. disclose carboxy methyl cellulose (CMC), hydroxyl ethyl cellulose, and polyvinyl pyrrolidone (column 5, lines 21-23).

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It is noted that the disclosed sample compounds mentioned in the reference are some of the same ones claimed in the instant application to be used as thickeners to stabilize the slurry.

Ince et al. and Slepets et al. are analogous art because they are from the same field of endeavor of improving slurries of calcined kaolin clay useful in paper coating and paper industry.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify Slepets et al. to include any of the thickener compounds as taught by Ince et al. motivated by the fact that the disclosed invention by Ince et al. does not impair the desirable characteristics which are provided to the paper by the use of such materials, such as (when used as a filler) increase in opacity, high light scattering, etc (column 5, lines 38-47).

Therefore, it would have been obvious to combine Ince et al. with Slepets et al. to obtain the invention as claimed in claims 7-9.

21. Regarding claims 10-12, Ince et al. disclose the addition of 2 to 10 pounds per ton (0.1% to 0.5%), based on the weight of the dry clay, of a thickener compound as mentioned above, to the clay slurry (column 5, lines 18-24).

22. Claims 23-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Slepets et al. in view of US Application Publication No. 2003/0141224 A1 to Pruett et al.

23. Regarding claims 23-25, Slepets et al. disclose a calcined kaolin pigment used in paper coating, paints, and plastics in which the content of clay solids is from 20% to 70% and about 60-85% have a particle size less than 1 $\mu$ m.

Slepets et al. is silent as to the pH range and a pH modifier used.

Pruett et al. disclose a method for beneficiating and dewatering kaolin clays used in pigments and paper coatings and paper filling comprising of several steps ([0031]-[0040]). Furthermore, they disclose that the pH during deflocculation in step (c) will be raised to between 6-12; this will be done using suitable agents such as sodium carbonate, sodium hydroxide, and ammonium hydroxide ([0044]).

Slepets et al. and Pruett et al. are analogous art because they are from the same field of endeavor of kaolin clay pigment composition used in paper coating and process of making or improving them.

At the time of the invention, it would have been obvious to modify Slepets et al. to include the pH range and pH modifiers such in the process of treating and improving the kaolin clay as that taught by Pruett et al. The motivation for doing so would have been that as disclosed by Pruett et al., iron oxide treatment need not to involve acidification or subsequent filtration; instead, the treatment of iron oxide impurities can be carried out over a range of pH compatible with that used during selective flocculation ([0025]). Furthermore, the removal of iron impurities is enhanced ([0029]).

Therefore, it would have been obvious to combine Pruett et al. with Slepets et al. to obtain the invention as specified in claims 23-25.

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24. Regarding claim 26, Pruett et al. do not disclose nor suggest subjecting the calcined kaolin to mechanical grinding.

25. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Slepets et al. in view of US Patent No. 5,282,898 to Wu.

26. Regarding claim 19, Slepets et al. disclose a calcined kaolin pigment used in paper coating, paints, and plastics in which the content of clay solids is from 20% to 70% and about 60-85% have a particle size less than 1 $\mu$ m.

Slepets et al. is silent as to the use of biocides in the kaolin clay slurry.

Wu teaches the use of biocides in calcined kaolin slurry (column 1, lines 9-12; column 6, line 11).

Slepets et al. and Wu are analogous art because they are from the same field of endeavor of improving calcined kaolin pigment in paper coating and paper filling.

It would have been obvious to a person of ordinary skill in the art to modify Slepets et al. in order to include the use of biocides in the calcined kaolin slurry as that taught by Wu motivated by the fact that Wu, also, teaches the use of calcined kaolin slurry with the pH range of 4 to 10 and materials such as biocides as well as thickening agents and dispersants in the pigment slurry preparation (column 5, lines 46-51; column 6, lines 7-13).

Therefore, it would have been obvious to combine Wu with Slepets et al. to obtain the invention as claimed in claim 19.

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27. Claim 34 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al. in view of Slepety et al.

28. Regarding claim 34, Chen et al. teach aqueous slurry of calcined kaolin containing about 30% to about 70% by weight of solids, based on the weight of the said aqueous slurry in such a way that about 80% by weight has an esd less than 1 micron (column 4, lines 22-26; column 6, lines 1-14). The reference, furthermore, teaches the process of treating calcined kaolin clay to obtain the desired particle size distribution and particle size (column 9, lines 60-67; column 10, lines 1-55).

Chen et al. do not disclose subjecting the clay to mechanical grinding.

Slepety et al., however, disclose "wet grinding" procedure for the kaolin clay to be calcined and used in that invention as described in detail above (column 6, lines 22-25).

Slepety et al. and Chen et al. are analogous art because they are from the similar problem solving area of obtaining and improving calcined kaolin clay used in paper coating and coating composition.

It would have been obvious to modify Chen et al. to include the "wet grinding" procedure as that taught by Slepety et al. The motivation for doing so would have been that, as disclosed by Slepety et al., the majority of the particles in the produced pigment are very fine; also, the coarse reject fraction produced as a result of separating a coarse kaolin clay to coarse and fine particles in the early stages of the process are used as well. In addition, the invention as disclosed by Slepety et al. generates

valuable fine calcined pigments from those same reject fractions (column 3, lines 20-45).

29. Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Slepety et al. in view of US Patent No. 3,309,214 to Werner Joseph et al.

30. Regarding claim 28, Slepety et al. disclose a calcined kaolin pigment used in paper coating, paints, and plastics in which the content of clay solids is from 20% to 70% and about 60-85% have a particle size less than 1 $\mu$ m.

Slepety et al. do not disclose any mullite in the claimed clay slurry.

Werner Joseph et al. disclose a calcined kaolin pigment and a process of their production (column 1, lines 10-17). The reference discloses that the kaolin clay is subjected to shock calcining, followed by a second, more prolonged heat treatment; this process causes at least partially crystallization to  $\gamma$ -Al<sub>2</sub>O<sub>3</sub> and mullite (column 1, lines 40-48, 58-61; column 3, lines 7-28, 69-75).

Slepety et al. and Werner Joseph et al. are analogous art because they both disclose calcined kaolin clay to be used as a pigment.

It would have been obvious to a person of ordinary skill in the art to modify Slepety et al. in order to include mullite in the clay slurry motivated by the fact that Werner Joseph et al. disclose that the disclosed two-stage heat treatment processes

which results in a calcined kaolin containing mullite that is used as a pigment, would result in a pigment having better whiteness, higher brightness, and better hiding power.

Therefore, it would have been obvious to combine Werner Joseph et al. with Slepetyts et al. to obtain the invention as specified in claim 28.

31. Claims 30-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al. in view of US Patent No. 5,320,897 to Kondo et al.

32. Regarding claims 30-33, Chen et al. disclose aqueous slurry of calcined kaolin clay used in coating composition which contains about 30% to 70% by weight of solids, and about 80% by weight the calcined kaolin has an equivalent spherical diameter (esd) less than 1 $\mu$ m (column 4, lines 22-26; column 6, lines 1-14).

Chen et al., even though disclosing the use of a dispersant in the aqueous calcined kaolin clay slurry, is silent at to the addition of a thickener or a pH modifier to the slurry.

Kondo et al. teach the addition of auxiliary agents such as dispersing agent, pH control agent, and thickener to the disclosed coating composition which further comprises pigment and binder (column 9, lines 14-24).

Chen et al. and Kondo et al. are analogous art because they both disclose a coating composition for ink jet paper.

It is noted that Chen et al., as described in detail above, disclose a coating composition, calcined kaolin slurry, having particle size and particle size distribution all within the claimed range in the instant application.

It would have been obvious to a person of ordinary skill in the art to modify Chen et al. to include a thickener and a pH control agent in addition to a dispersant as that taught by Kondo et al. motivated by the fact that the disclosed ink jet recording paper by Kondo et al. has excellent ink receptivity, ink dryness, image density, color reproduction, and color brightness (column 2, lines 36-40).

Therefore, it would have been to combine Kondo et al. with Chen et al. in order to obtain the invention as specified in claims 30-33.

### ***Conclusion***

33. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US Patent No. 6,334,894 B1 to Kostuch.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Pegah Parvini whose telephone number is 571-272-2639. The examiner can normally be reached on Monday to Friday 8:00am-4:30pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jerry Lorendo can be reached on 571-272-1233. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

PP



J.A. LORENDO  
SUPERVISORY PATENT EXAMINER

A handwritten signature of "J.A. LORENDO" is written over a circular official seal. Below the signature, the text "SUPERVISORY PATENT EXAMINER" is printed in capital letters.